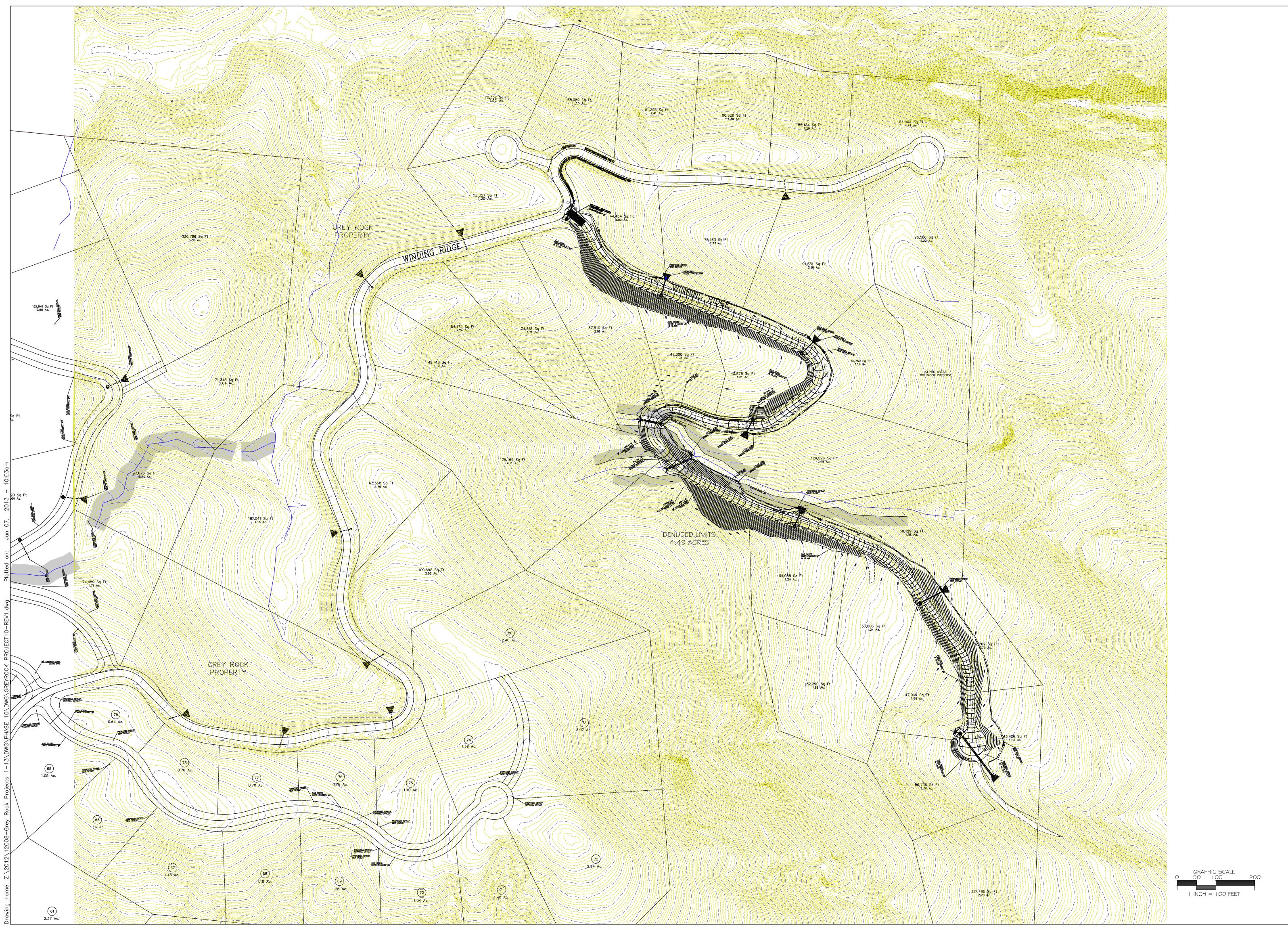
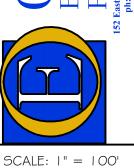
12008 CONSTRUCTION PLANS FOR PROJECT 10 OF GREYROCK SUBDIVISON LAKE LURE RUTHERFORD COUNTY, N.C. GENERAL NOTES: PROJECT OWNER: PROPERTY OWNER: RUTHERFORD COUNTY, GREYROCK HOMEOWNERS $\mathbb{N}.\mathbb{C}.$ ASSOCIATION **PROJECT** PROJECT 8 PROJECT 2 PROJECT 9 PROJECT 10 SUBDIVISIO PROJECT 3B PROJECT 4A PROJECT 4B LOGGING ROAD SHEET INDEX TITLE (1 COVER OVERALL PLAN PROJECT 6 DRAINAGE PLAN ROAD PLAN AND PROFILE CULVERT DRAWINGS/CALCS PROJECT 7 DATE: 05/13/13 CHECKED BY: DWO PROJECT MGR: DWO COVER



PLAN AND SPECIFICATION WAS PREPARED BY ME OR UNDER MY DIRECT A DULY REGISTERED ARCHITECT OR ENGINEER UNDER THE LAWS OF THE STATE OF NORTH CAROLINA LAYOU SUBDIVISIO **PROJECT**

YROCK OVERALL GRE

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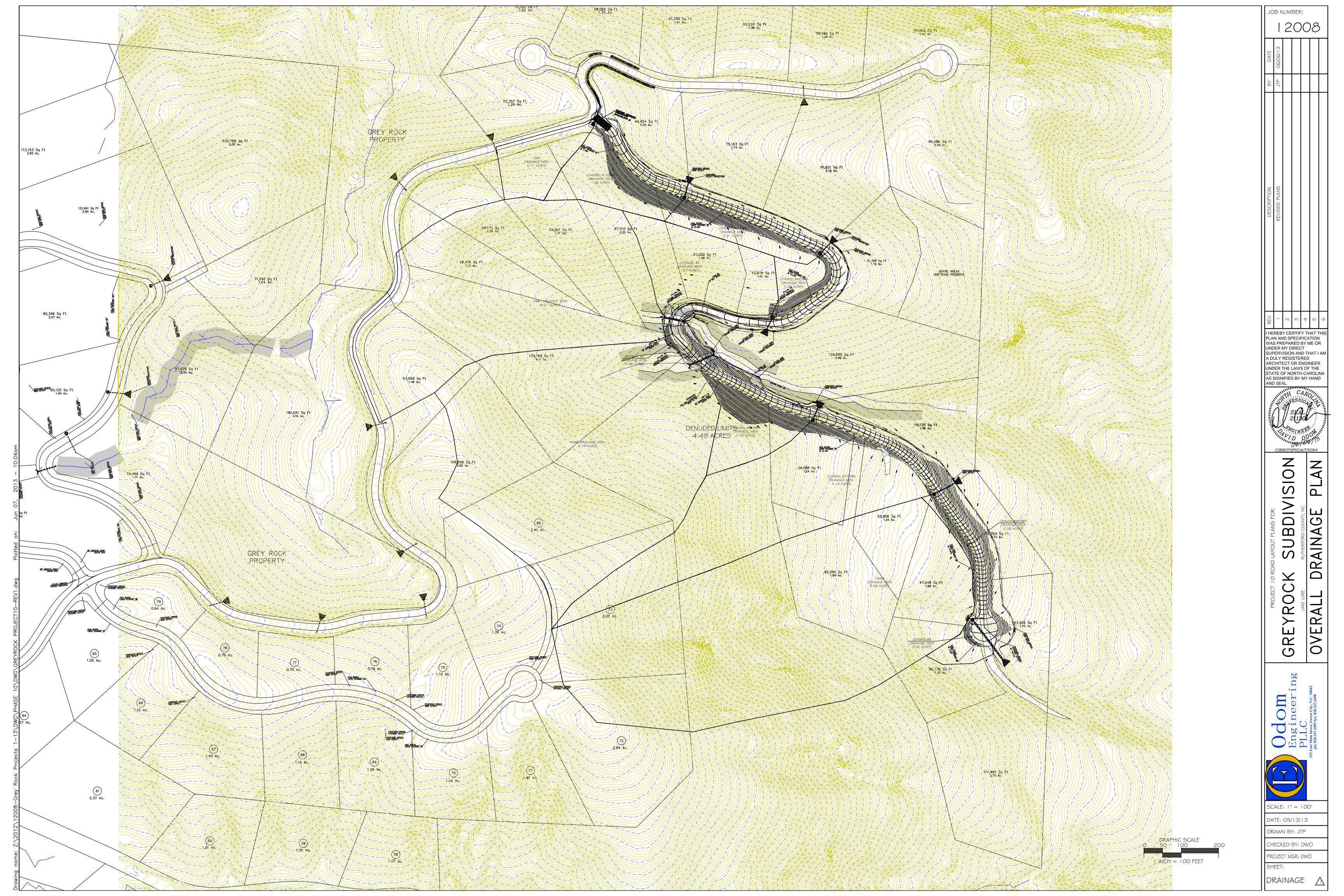


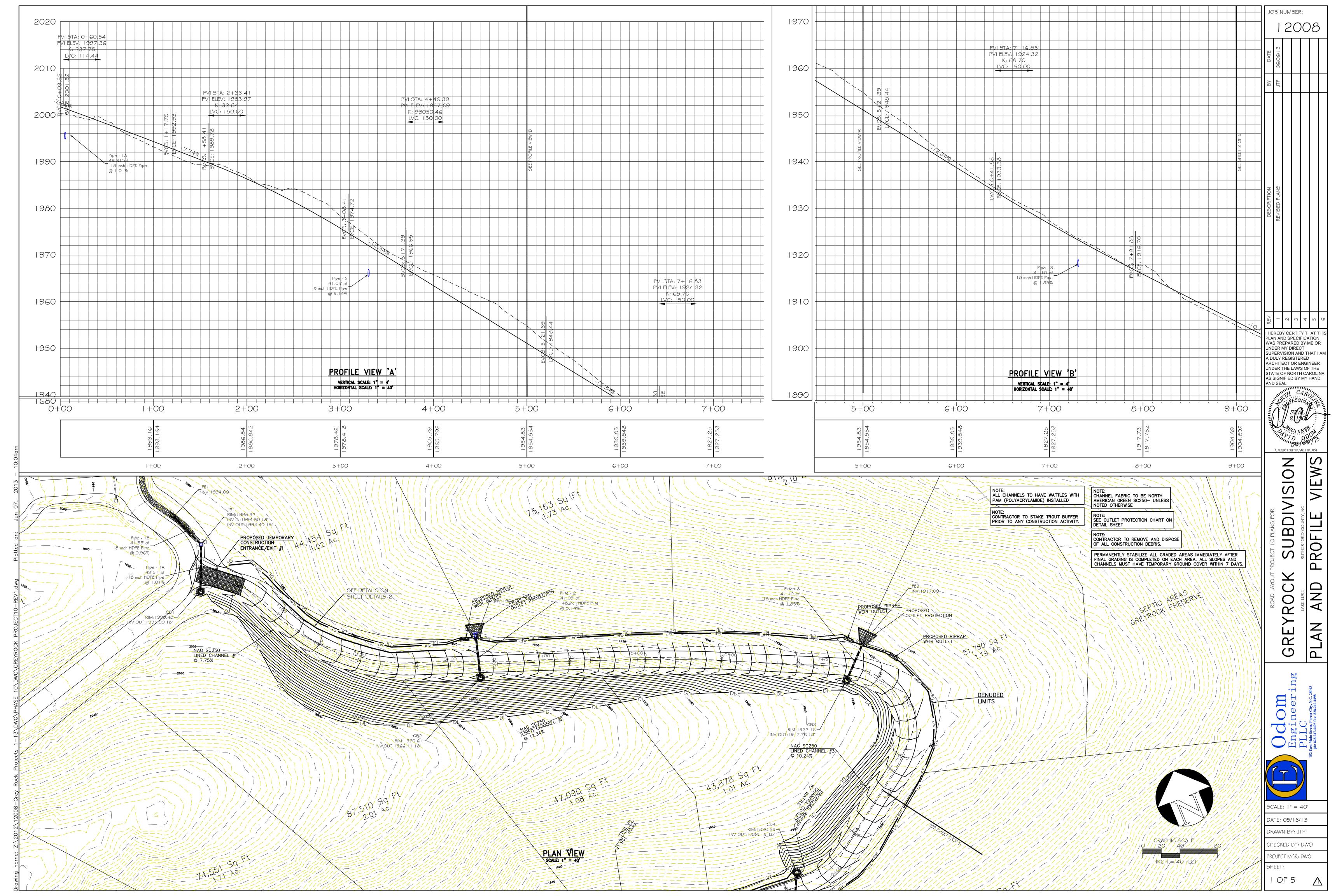
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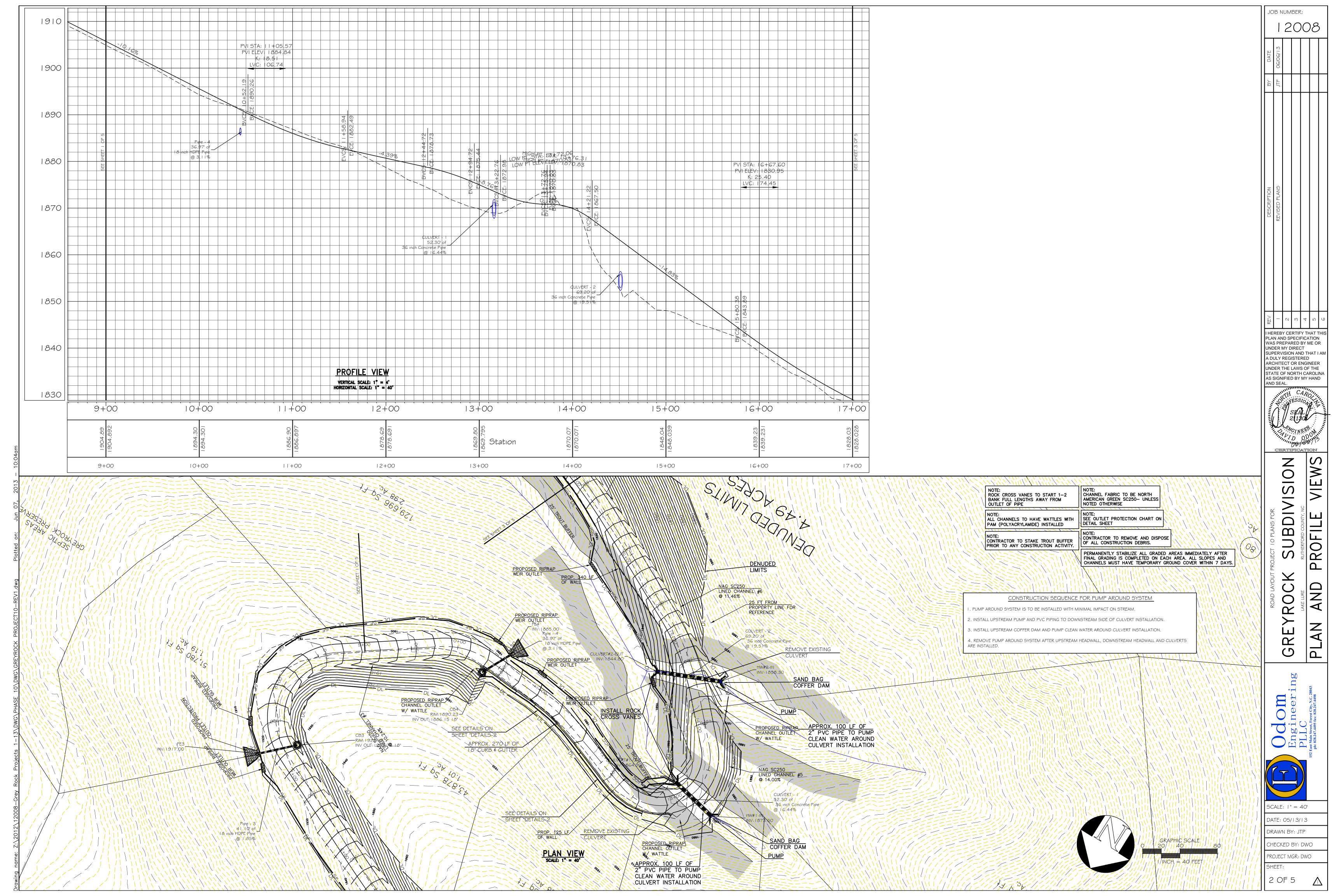
DATE: 05/13/13 DRAWN BY: JTP

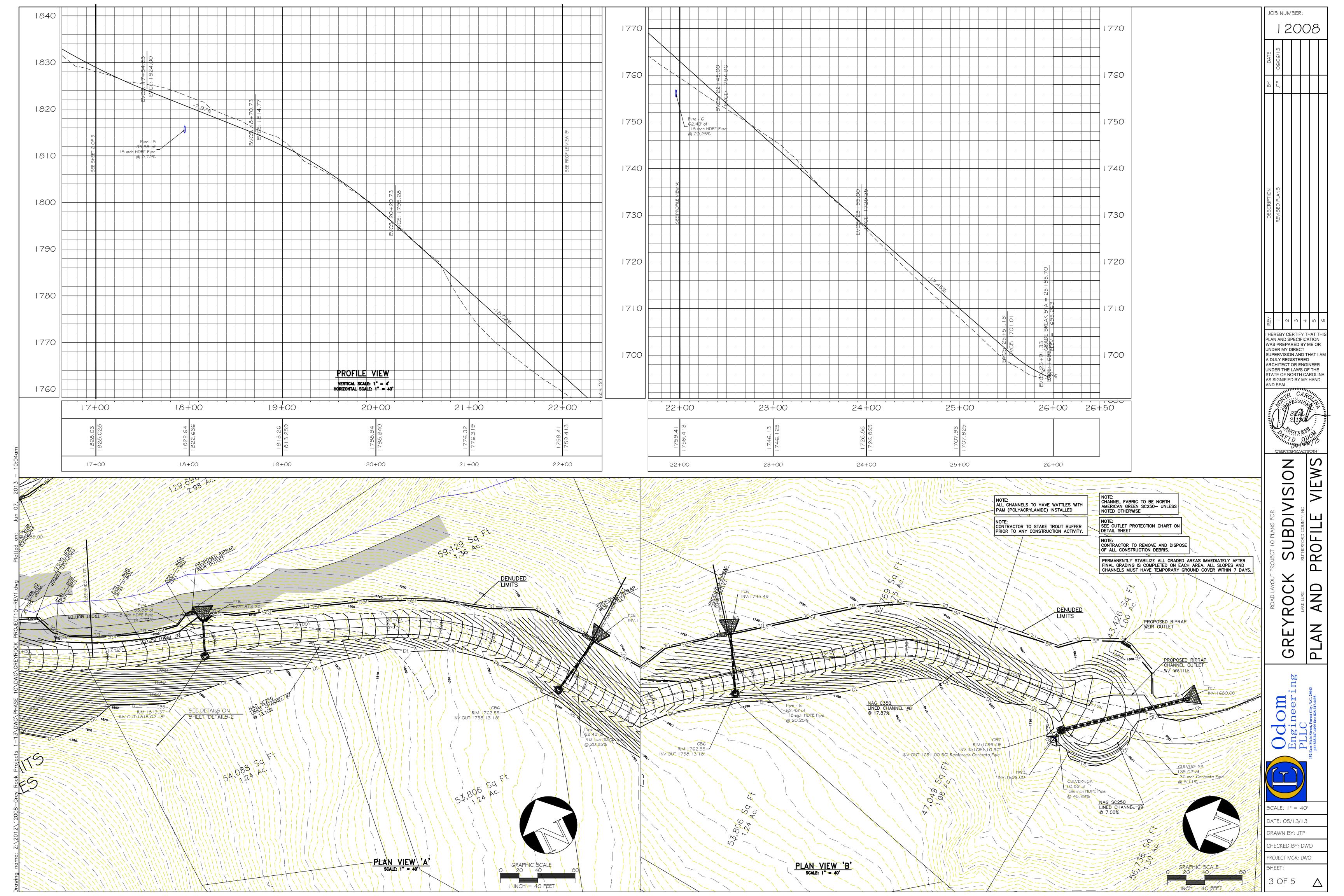
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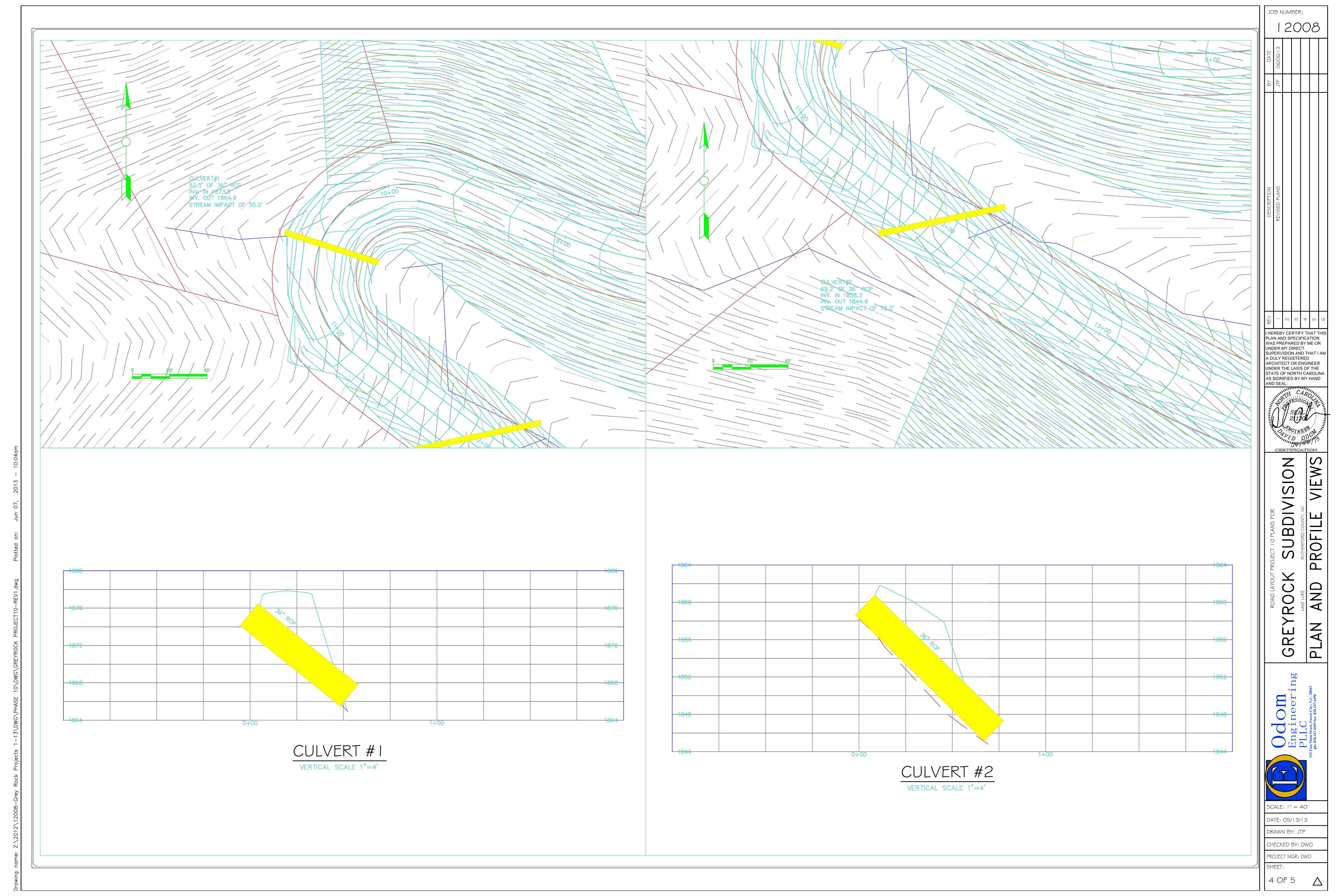
OVERALL











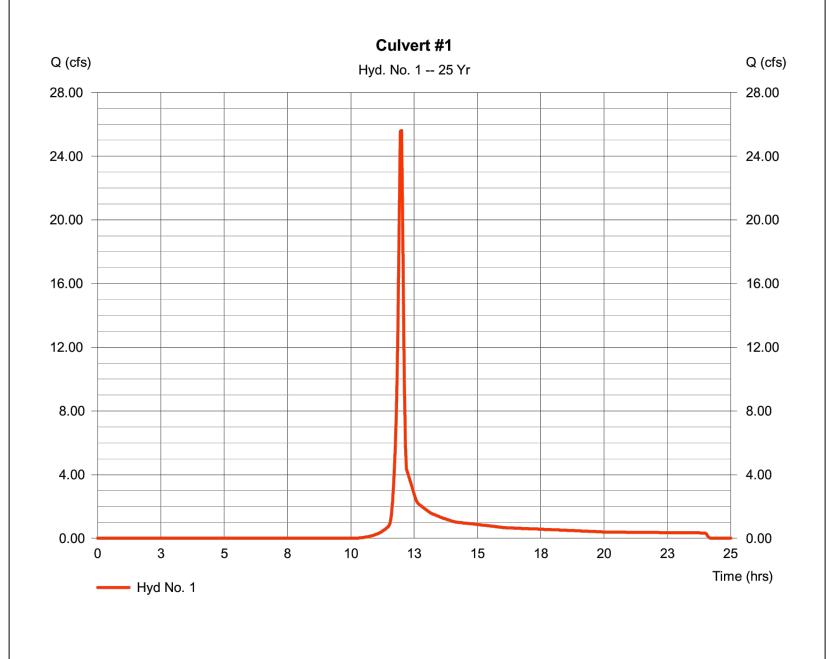
Hydrograph Plot Hydraflow Hydrographs by Intelisolve

Sunday, Apr 15 2012, 4:3 PM

Hyd. No. 1 Culvert #1

Hydrograph type = SCS Runoff Peak discharge = 25.61 cfs Storm frequency = 25 yrs Time interval = 3 min Curve number = 65 Hydraulic length = 719 ft = 7.900 ac = 32.0 % Drainage area Basin Slope = LAG Time of conc. (Tc) = 6.58 min Tc method = Type II = 484 = 5.77 in Total precip. Distribution Storm duration = 24 hrs Shape factor

Hydrograph Volume = 58,757 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve Friday, Apr 13 2012, 11:53 AM Hyd. No. 2

Culvert #2

Hydrograph type = SCS Runoff Storm frequency = 25 yrs = 7.940 ac = 37.0 % Drainage area Basin Slope = LAG Tc method = 5.77 in Total precip.

= Type II = 484 Distribution Shape factor Storm duration = 24 hrs

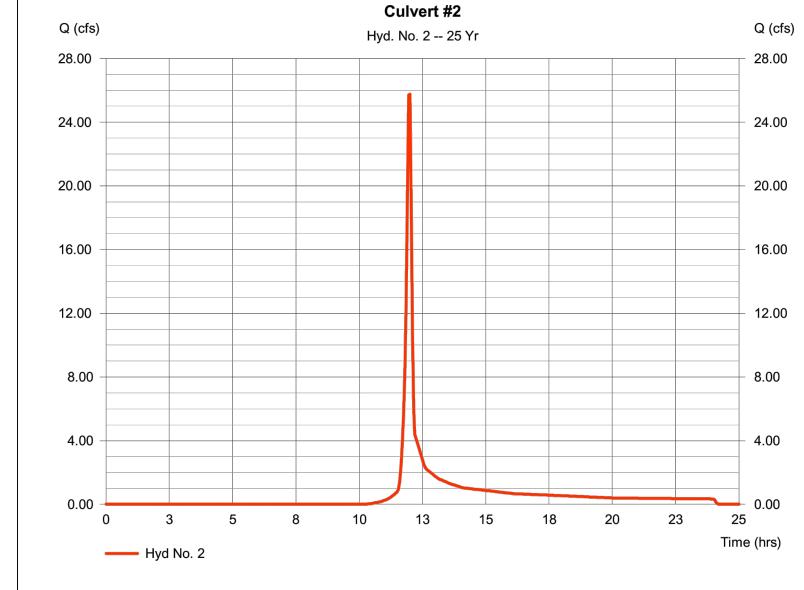
Peak discharge = 25.74 cfs Time interval = 3 min

Curve number = 65

Hydraulic length = 876 ft

Time of conc. (Tc) = 7.17 min

Hydrograph Volume = 59,054 cuft



Hydrograph Summary Report

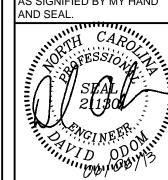
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	18.16	3	720	41,650				Culvert #1
2	SCS Runoff	25.74	3	720	59,054				Culvert #2

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph
NO.			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	description
1	SCS Runoff							18.16			Culvert#1
2	SCS Runoff							25.74			Culvert #2

JOB NUMBER:

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UNDER THE LAWS OF THE
STATE OF NORTH CAROLINA
AS SIGNIFIED BY MY HAND
AND SEAL.

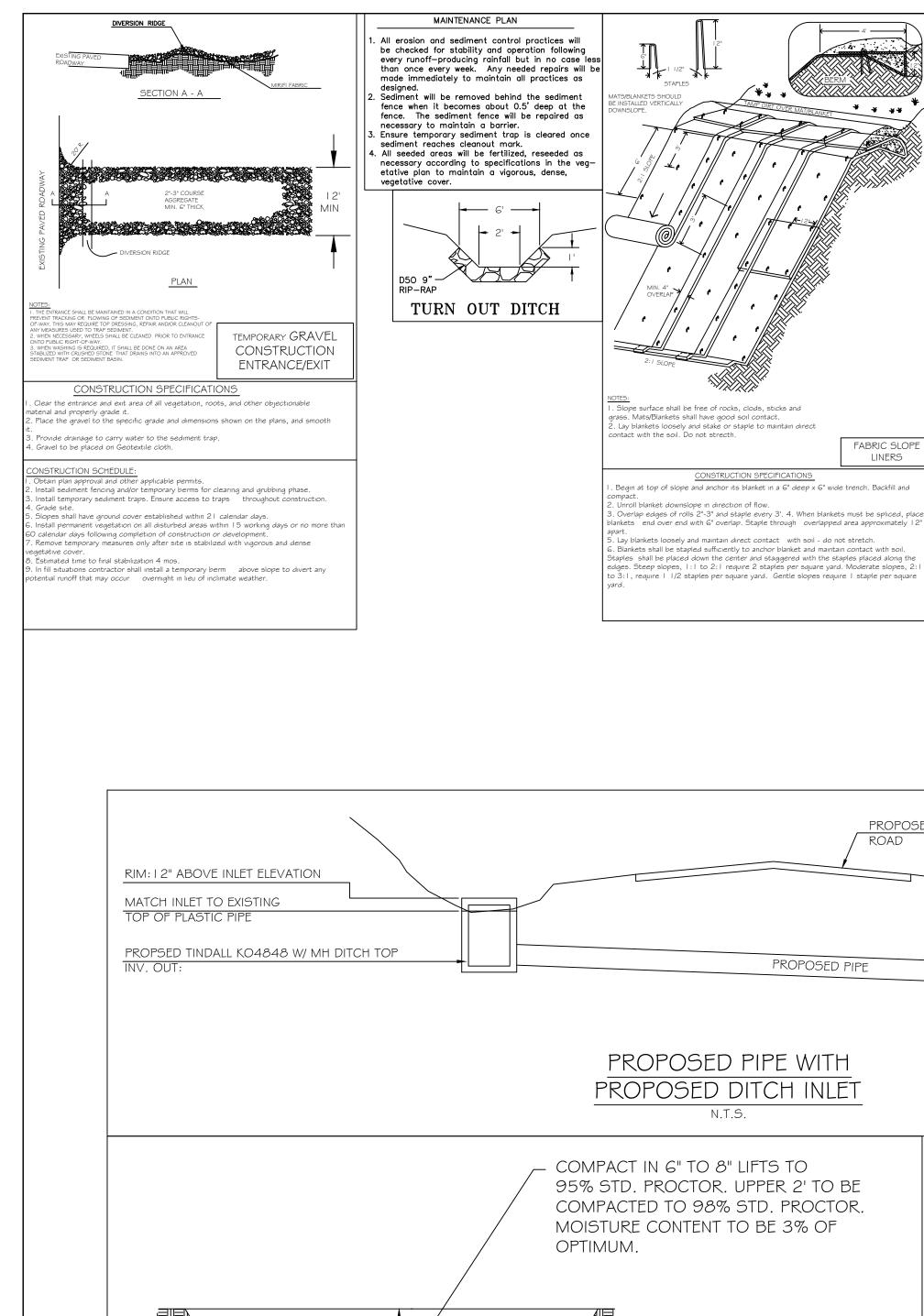


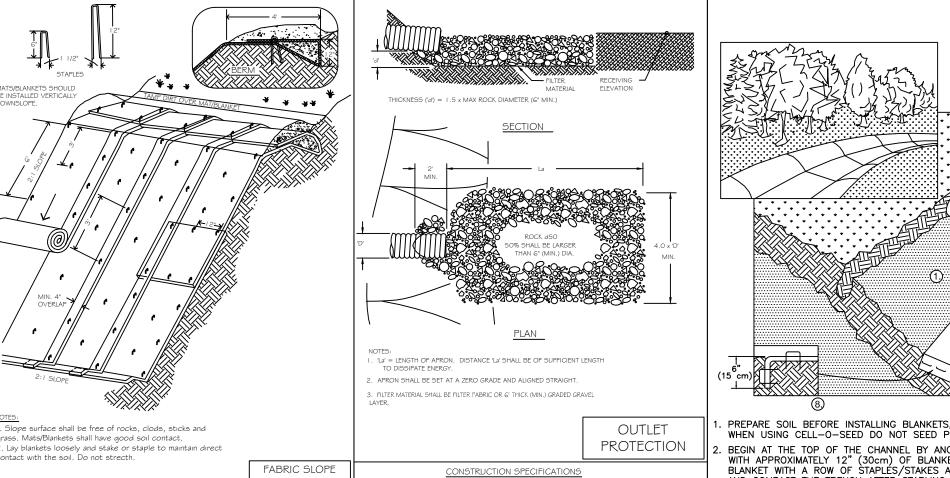


DATE: 05/13/13 DRAWN BY: JTP

PROJECT MGR: DWO

4 OF 5





subgrade to the density of the surrounding undisturbed material. Low areas in the

rade on undisturbed soil may also be filled by increasing riprap thickness.

rap at the downstream end level with the receiving area or slightly below it.

liter cloth, when used, must meet design requirements and be protected from

unching or tearing. All connecting joints should overlap at least 1'. . Riprap may be field stone or rough quarry stone. It should be hard, angular, highly

ther-resistant and well graded. Construct the apron on zero grade with no over- fall at the end. Make the top of the

insure that the apron is properly aligned with the receiving stream and preferably

ght throughout its length. If a curve is needed, place it in the upper end of the

All erosion and sediment control practices will be checked for stability and operation

wing every runoff-producing rainfall but in no case less than once every week. Any

the fence. The sediment fence will be repaired as necessary to maintain a barrier.

All seeded areas will be fertilized, reseed as necessary according to specifications in

21", 24"

27", 30", 36"

42", 48"

ediment will be removed behind the sediment fence when it becomes about 0.5' dee

ded repairs will be made immediately to maintain all practices as designed.

vegetative plan to maintain a vigorous, dense, vegetative cover.

LINERS

PROPOSED PIPE

PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN. 2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION sure subgrade for the filter and riprap is at zero grade. Compact any fill required in OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.

ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN. PLACE CONSECUTIVE BLANKETS END OVER END (SHINGLE STYLE) WITH A 4"-6" (10cm-15cm) OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10cm) APART AND 4" (10cm) ON CENTER TO SECURE BLANKETS. 5. FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. 6. ADJACENT BLANKETS MUST BE OVERLAPPED APPROXIMATELY 2"-5" (5cm-12.5cm) (DEPENDING ON BLANKET TYPE) AND STAPLED.
TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN
WITH THE COLORED SEAM STITCH™ON THE BLANKET BEING OVERLAPPED. . IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT (9m-12m) INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10cm) APART AND 4" (10cm) ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.

THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. * HORIZONTAL STAPLE SPACING SHOULD BE ALTERED CRITICAL POINTS IF NECESSARY TO ALLOW STAPLES TO SECURE THE A. OVERLAPS AND SEAMS CRITICAL POINTS ALONG THE CHANNEL SURFACE. B. PROJECTED WATER LINE

SUPER SILT FENCE—— FILTER FABRIC

WIRE TIES EVERY 8"
VERTICALLY AT OVERLAPS

8" HIGH CHAIN LINK

C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

1. SET POSTS ALONG CONTOUR OF THE LAND AN EXCAVATE TRENCH UPSLOPE ALONG THE LINE OF POSTS.

2. ATTACH THE CHAIN LINK FENCE AND FILTER FABRIC TO THE FENCE POSTS AND EXTEND THEM 12", MINIMUM, INTO THE DITCH.

3. BACKFILL AND COMPACT THE TRENCH WITH EXCAVATED SOILS.

** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 cm) MAY BE NECESSARY TO PROPERLY ANCHOR THE BLANKETS. *** GREATER THAN 7% CHANNEL SHALL BE RIPRAP LINED. LESS THAN 7% CHANNEL SHALL BE LINED WITH NAGS75 OR EQUIVALENT WITH RIP RAP CHECKDAM EVERY 50 FEET.

SUPER SILT FENCE NOTES:

1. CHAIN LINK FENCE SHALL BE CONSTRUCTED IN ACCORDANCE WITH APPROVED SPECIFICATIONS. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE POSTS WITH WIRE TIES OR STAPLES.

3. THE FILTER FABRIC SHALL BE FASTENED TO TH

CHAIN LINK FENCE WITH TIES EVERY 24" AT THE TOP AND MID SECTION.

6. 4"X4" PRESSURE TREATED POSTS MAY BE SUBSTITUTED FOR METAL FENCE POSTS WITH THE APPROVAL OF THE ENGINEER.

SUPER

SILT FENCE

2. POSTS NEED NOT BE SET IN CONCRETE.

SECTION A-A DROP INLET SEDIMENT BARRIERS ARE TO USED FOR SMALL, NEARLY LEVEL DRAINAGE EAS. (LESS THAN 5%)

oply seed, at the rates above, in two intersecting directions. Rake To not seed areas in excess of that which can be mulched on same

ONLY DISTURB CLEAR OR GRADE AREAS NECESSARY FOR CONSTRUCTION.

CLEAR AND GRUB AREAS TO BE FILLED TO REMOVE TREES, VEGETATION,

MUCK, ROOTS, OR OTHER OBJECTIONABLE MATERIAL THAT WOULD AFFECT

FLAG OR OTHERWISE DELINEATE AREAS NOT TO BE DISTURBED. EXCLUDE

VEHICLES AND CONSTRUCTION EQUIPMENT FROM THESE AREAS TO PRESERVE

ing windy periods.
Roll seeded area with roller not exceeding 112 lbs. nmediately following seeding and compacting, apply mulch to a ness of 1/8 inches. Maintain clear of shrubs and trees. Apply water with a fine spray immediately after each area has been ied. Saturate to 4 inches of soil. gainst the entrance of material. D PROTECTION:

tring height to 6 inches. over seeded slopes where grade is 4 inches per foot or greater wit sion fabric. Roll fabric onto slopes without stretching or pulling. ay fabric smoothly on surface, bury top end of each section in 6 inches excavated topsoil trench. Provide 12 inch overlap of adjacent rolls kfill trench and rake smooth, level with adjacent soil. ecure outside edges and overlaps at 36 inch intervals with stakes. ightly dress slopes with topsoil to ensure close contact between At sides of ditches, lay fabric laps in direction of water flow. Lap ends edges minimum 6 inches.

NATURAL VEGETATION.

PERMANENT SEEDING

40 lb/ac

4000 lb/ac

10 lb/ac

4000 lb/ac

40 lb/ac

1 20 lb/ac

1 20 lb/ac

2000 lb/ac

4000 lb/ac

Do not sow immediately following rain, when ground is too dry, or

50 lb/ac

750 lb/ac

INTER/EARLY SPRING (Feb 1 - May 15)

TEMPORARY SEEDING

1000 lb/ac

4000 lb/ac

10-10-10 fertilizer 1200 lb/ac

Serica lespedeza (Scarified) 30 lb/ac

GRASS-LINED CHANNELS

Kentucky bluegrass

LL OTHER SURFACES

Rye (grain)

all fescue

straw

|--4"--|

Kobe lespedeza

German millet

Rye (grain)

Rye (grain)

0-10-10

Korean lespedeza

10-10-10 fertilizer

UMMER (May 15 - Aug 15)

FALL (Aug 15 - Dec 15)

THE TOP OF THE STRUCTURE (PONDING HEIGHT)
UST BE WELL BELOW THE GROUND ELEVATION
DWNSLOPE TO PREVENT RUNOFF FROM BY-SING THE INLET. EXCAVATION OF A BASIN ACENT TO THE DROP INLET OR A TEMP-

> SEDIMENT BARRIER CONSTRUCTION SPECIFICATIONS

. Place the stone slope toward the inlet at a 3:1 or flatter slope. A minimum 1 foot wide level area set 4 inches below the drop inlet crest will add further protection . Stone on the slope toward the inlet should be 3 inches or larger for stability, and nch or smaller on the slope away from the inlet to control flow rate. 5. Wire mesh with 2 inch openings may be placed over the drain grating, but must be pected frequently to avoid blockage by trash.

DITCH INLET

D50 9" RIP-RAP FILTER FABRIC-DUPONT-TYPAR STYLE 3401 OR APPROVED EQUAL TYPICAL SECTION

RIP RAP LINED CHANNEL

JOB NUMBER:

HEREBY CERTIFY THAT THIS

PLAN AND SPECIFICATION

WAS PREPARED BY ME OR

SUPERVISION AND THAT I AM

UNDER MY DIRECT

AND SEAL.

A DULY REGISTERED

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ARCHITECT OR ENGINEER

UNDER THE LAWS OF THE

STATE OF NORTH CAROLINA

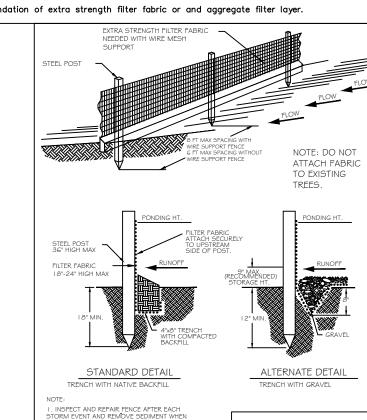
AS SIGNIFIED BY MY HAND

CONSTRUCTION SPECIFICATIONS

. Excavate cross section to grades shown on plans. Overcut for thickness of rock and filter. 2. Place filter fabric or gravel filter layer, and rock as soon as the foundation is prepared. 3. Place rock so it forms a dense, uniform, well-graded mass with few voids. Hand placement may be necessary to obtain good size distribution 4. No overfall of channel construction should exist. Grass lined channels with riprap bottoms must have a smooth contact between riprap and vegetation

6. Use a foundation of extra strength filter fabric or and aggregate filter layer.

5. Outlet must be stable.



CONSTRUCTION SPECIFICATIONS

lyethylene yarn, which is certified by the manufacturer or supplier as having a minimum tering efficiency of 85%, tensile strength OF 50 lb/in (standard) or 50 lb/in (extra trength) at 20% elongation, and a slurry flow rate of 0.3 gal/sq ft. Synthetic fabric ould contain ultraviolet ray inhibitors and stabilizers to provide min. 6 months vected usable life at 0-120 deg. F. Ensure that posts are 1.33 lb/ft steel with a minimum length OF 5 feet. 3. Use min. 4 gauge wire fence with max mesh spacing of 6".

SILT FENCE

Ensure height of fence does not exceed 18" above ground surface. Construct fabric from continuous roll cut to length of barrier to avoid joints. When nts are necessary, securely fasten the filter cloth only at a support post with overlap Support standard strength fabric with wire mesh fastened securely to upslope side posts using heavy duty wire staples at least I" long. Extend wire mesh to bottom of

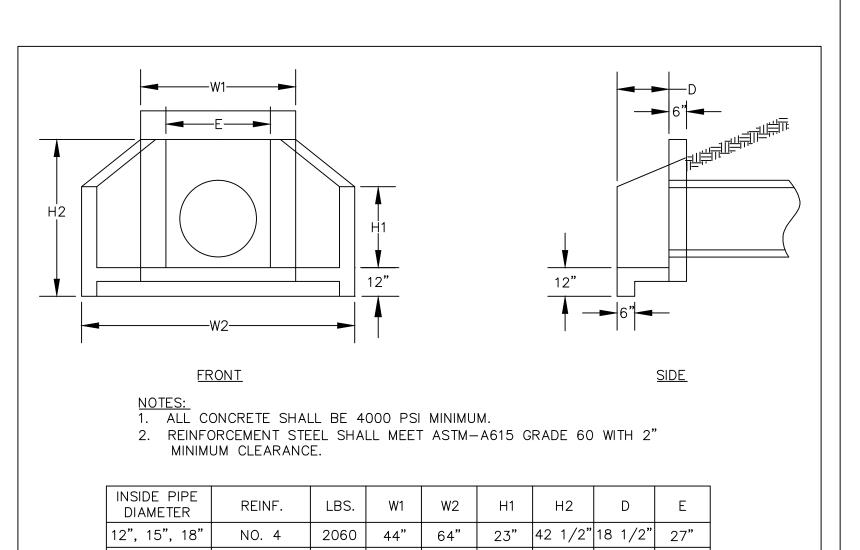
ESTABLISHMENT. PERMANENTLY STABILIZE ALL GRADED AREAS IMMEDIATELY AFTER FINAL GRADING IS COMPLETED ON EACH AREA. 2:1 OR STEEPER SLOPES MUST HAVE TEMPORARY GROUND COVER WITHIN 7 DAYS. 3:1 SLOPES OR FLATTER SLOPES MUST HAVE TEMPORARY GROUND COVER WITHIN 14 DAYS (TINDALL MDT 1365# OR EQUIVALENT) - RIM ELEVATION SLOPE - INVERT ELEVATION PRECAST KNOCKOUT BASIN
(TINDALL KO4848 OR EQUIVALENT)
4000 PSI CONCRETE
H-20 LOADING INSTALL & MAINTAIN INLET PROTECTION AROUND ALL STORM DRAIN INLETS DURING CONSTRUCTION. DITCH INLET ADAPTOR

PIPE-6 12.42

18

THE PLANTED STABILITY OF THE FILL. NECLESSARY.
2. REMOVED SEDIMENT SHALL BE DEPOSITED
TO AN AREA THAT WILL NOT CONTRIBUTE
SEDIMENT OFF-SITE AND CAN BE PERMANENTLY
STABILIZED. PLACE FILL IN LAYERS NOT TO EXCEED 6" IN THICKNESS AND COMPACT THE LAYERS AS REQUIRED TO TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, OR OTHER RELATED PROBLEMS. KEEP DIVERSIONS AND CHANNELS AND OTHER WATER CONVEYANCE MEASURES FREE OF SEDIMENT AT ALL TIMES. ROUGHEN THE SURFACE OF ALL SLOPES DURING THE CONSTRUCTION OPERATION ONSTRUCTION MATERIAL: TO RETAIN WATER, INCREASE INFILTRATION, AND FACILITATE VEGETATION

PROPOSED PIPE WITH N.T.S. COMPACT IN 6" TO 8" LIFTS TO 95% STD. PROCTOR. UPPER 2' TO BE COMPACTED TO 98% STD. PROCTOR. MOISTURE CONTENT TO BE 3% OF OPTIMUM. I'MIN -- 3" WASHED STONE MIN. IF SUBGRADE IS ROCK INCREASE - SUBGRADE BEDDING TO 6" WASHED STONE PIPE BEDDING DETAIL RCP & HDPE



85"

5940 64" 108" 41"

8040 79" 150"

PRECAST CONCRETE HEADWALL

31"

52"

56"

72"

79"

90"

24"

36"

40"

48"

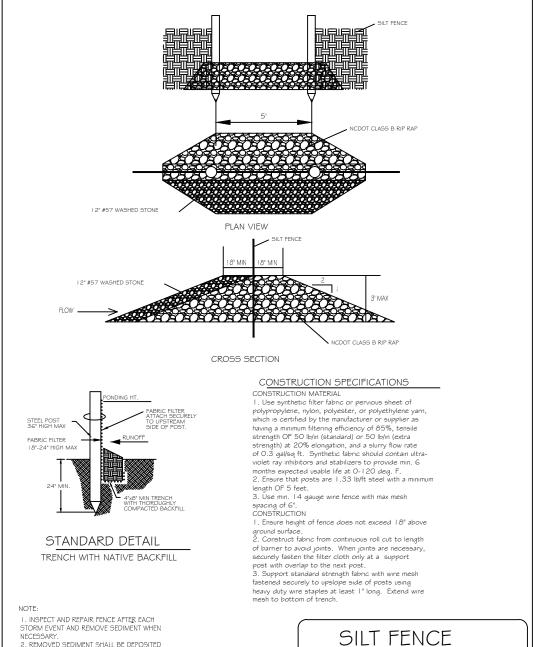
49"

NO. 4 | 3100 | 50" |

54", 60", 72" NO. 4, NO. 5 16000 105" 161" 60"

NO. 4

NO. 4



WITH OUTLET WEIR

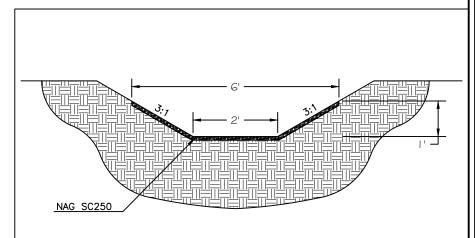
NECESSARY.

2. REMOVED SEDIMENT SHALL BE DEPOSITED

2. REMOVED SEDIMENT STRAIL BE DEFOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.

GREY ROCK PROJECT 10 RIPRAP OUTLET PROTECTION Apron Width Length (ft) Number Flow (cfs) Dia (in) Size (ft) Pipe Outlet (ft) at End (ft) CULVERT-3 29.88 PIPE-1A/1B 2.13 0.75 20 18 PIPE-2 3.15 18 0.75 20 2.13 PIPE-3 18 0.75 15 20 1.41 20 PIPE-4 18 0.75 15 PIPE-5 2.88 0.75 20 18 15

0.75



TYPICAL SECTION

NAG SC250 LINED CHANNEL

15

20

CONSTRUCTION SPECIFICATIONS

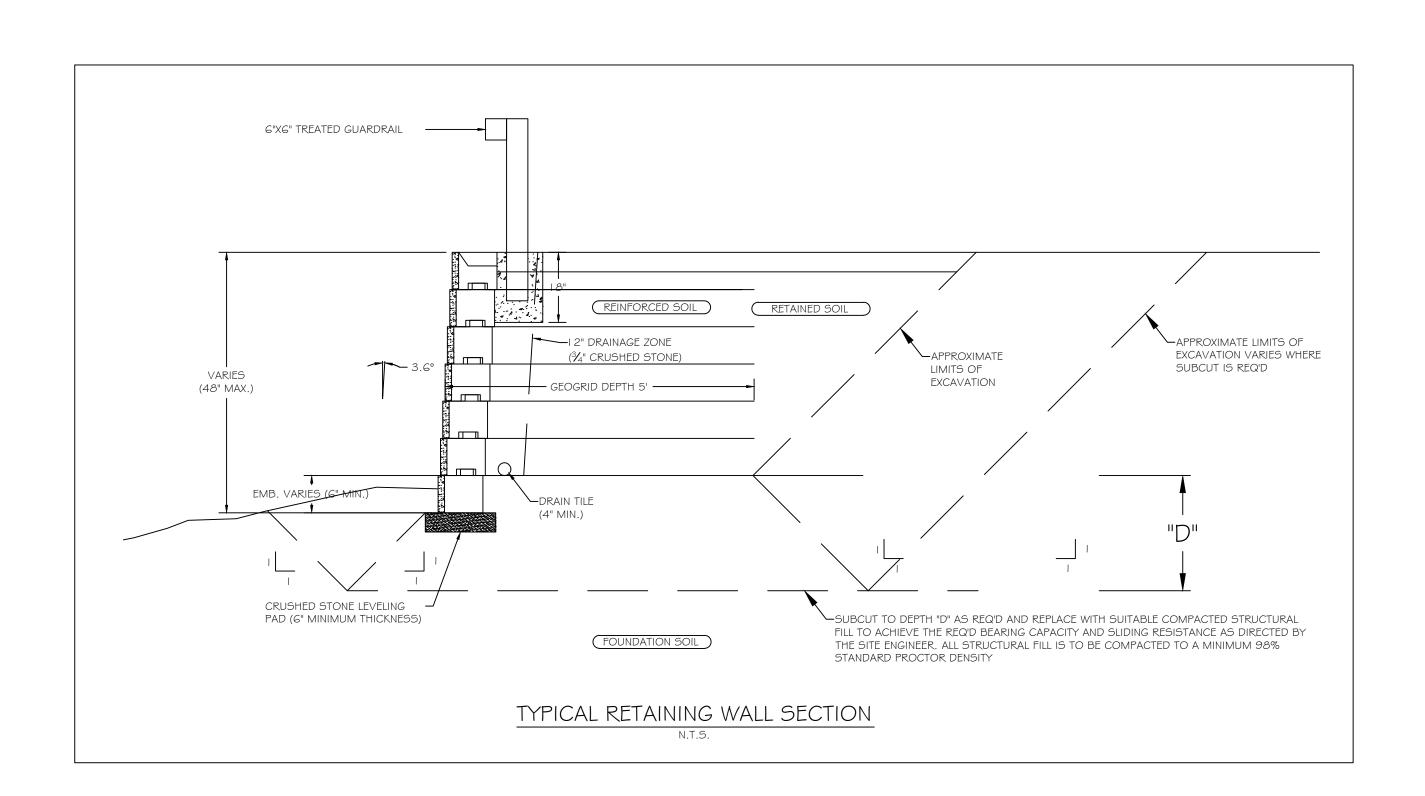
. Excavate cross section to grades shown on plans. Overcut for thickness of rock and filter. 2. Place filter fabric or gravel filter layer, and NAG SC250 as soon as the foundation is

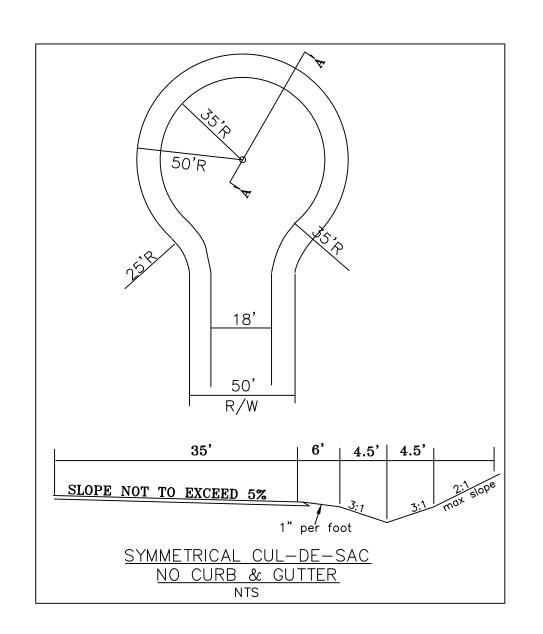
5. Outlet must be stable.

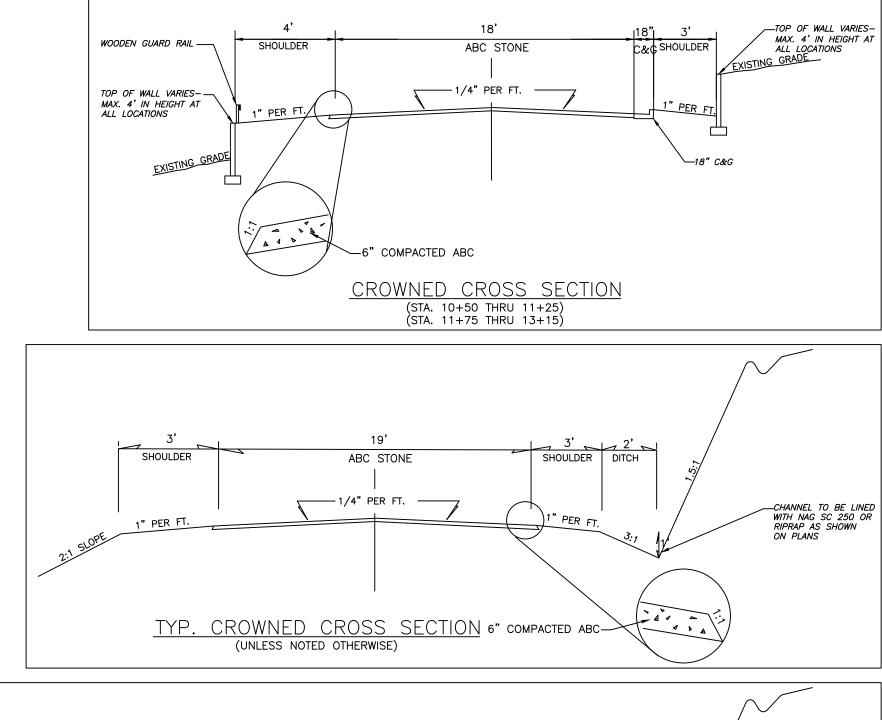
3. Place NAG SC250 per manufacturer's specifications. 4. No overfall of channel construction should exist. Grass lined channels with NAG SC250 6. Use a foundation of extra strength filter fabric or and aggregate filter layer.

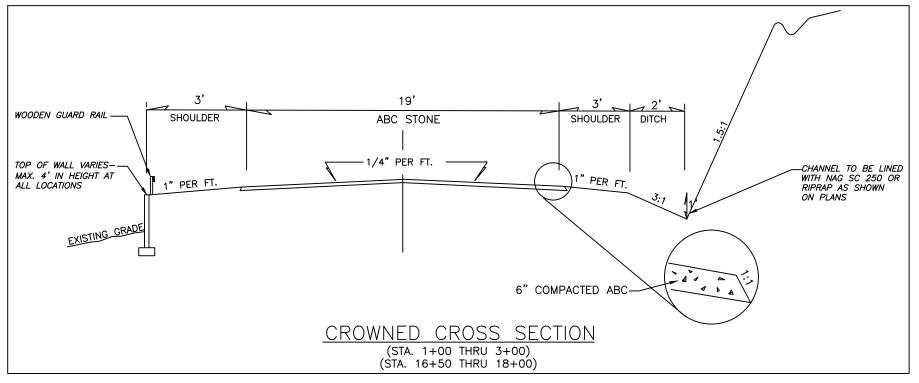
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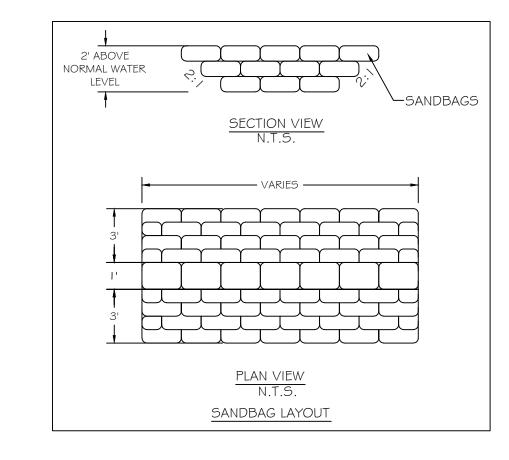
DETAILS- I

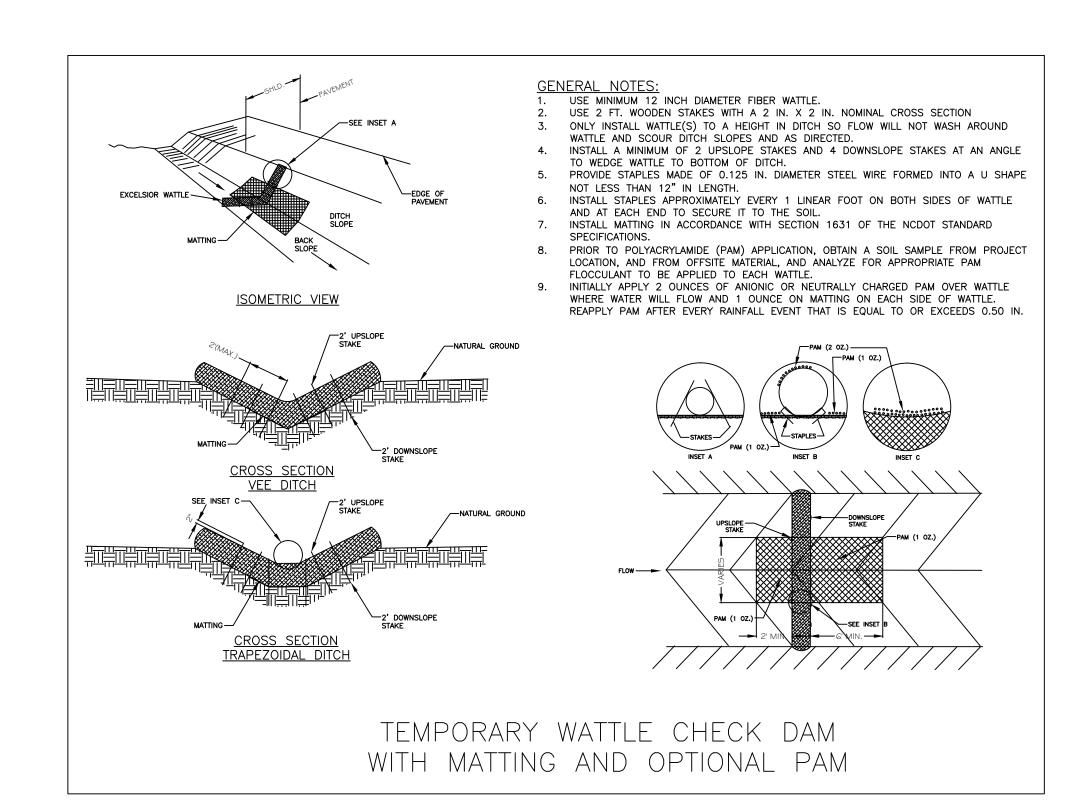


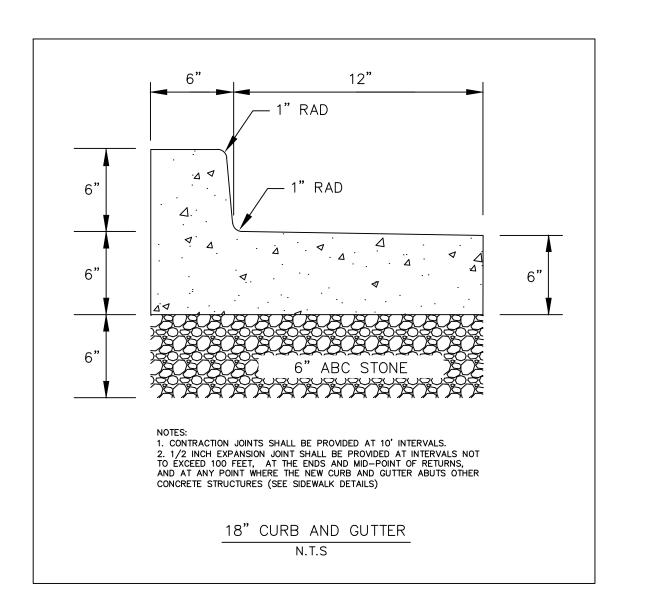


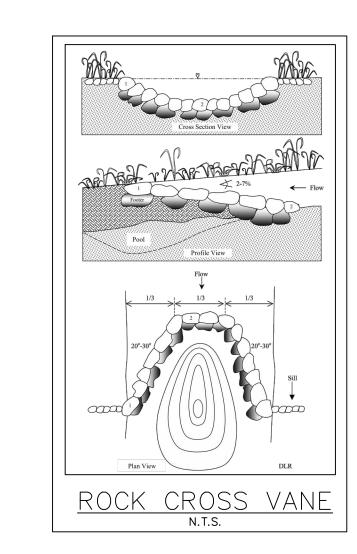














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DRAWN BY: JTP

CHECKED BY: DWO

PROJECT MGR: DWO
SHEET:

DETAILS-2